

Environmental Assessment

for

The Ten High Density Management Study and Commercial Thinning  
OR 090-EA-98-11

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**UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
EUGENE DISTRICT**

**1792A  
Ten High  
EA-98-11**

**ENVIRONMENTAL ASSESSMENT NO. OR090-98-11  
Ten High Density Management Study and Commercial Thinning**

**INTRODUCTION**

A cooperative Density Management Study between the Bureau of Land Management (BLM), Oregon State University (OSU), National Biological Survey (NBS), and U.S. Forest Service Pacific Northwest Research Station (PNW) has been developed to research various aspects of the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (NSO ROD). Research activity would include testing silvicultural systems to accelerate the development of old growth characteristics, and an opportunity to monitor the effects of density management in Riparian Reserves on microclimate and riparian-associated species. The Riparian Buffer Component of the proposed Density Management Study would study the effects of interactions between protected riparian areas of different widths and upslope forest density management treatments on forest microhabitat and microclimate characteristics. These characteristics would be evaluated for their relative ability to provide growing conditions that accelerate tree regeneration and understory development. Stand conditions would also be evaluated with respect to their relative provision of suitable habitat for riparian species.

A research exception for the Density Management Study within this proposed action has been granted by the Regional Ecosystem Office in accordance with the requirements of the NSO ROD (pp. C-4, C-38).

This Environmental Assessment (EA) also will address a proposed commercial thinning adjacent to the cooperative Density Management Study.

**I. PURPOSE AND NEED FOR ACTION**

The proposed project area is located in Sections 10 and 15, Township 15 South, Range 7 West, in the Coast Range Resource Area of the Eugene District and the Mary's Peak Resource Area of the Salem District of the BLM. The project area is within the Matrix land use allocation and includes management objectives for both Matrix and Riparian Reserves.

The purpose and need for the proposed action is described by the following objectives:

1) to provide forest products while maintaining or enhancing the productivity, sustainability, and diversity of the forest ecosystem.

2) to provide a research site for the Density Management Study, which will contribute to the scientific knowledge needed to implement the NSO ROD. The purpose, need, and objectives of the Density Management Study are further detailed in the research study plans, which are contained in the project analysis files.

3) to accelerate the attainment of Aquatic Conservation Strategy (ACS) objectives. "Under the Aquatic Conservation Strategy, Riparian Reserves are used to maintain and restore riparian structures and functions of streams, confer benefits to riparian-dependent and associated species other than fish, enhance habitat conservation for organisms that are dependent on the transition zone between upslope and riparian areas, improve travel and dispersal corridors for many terrestrial animals and plants, and provide for greater connectivity of the watershed." (ROD B-13)

### **Conformance**

The proposed action and alternatives are in conformance with the *"Record of Decision (ROD) for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl"* (April 1994), the *"Eugene District Record of Decision and Resource Management Plan"* (June 1995), and the *"Salem District Record of Decision and Resource Management Plan"* (May 1995), to which this document is tiered. These EISs are incorporated by reference.

Watershed analysis has been completed for the Lake Creek Watershed. The watershed analysis identified the need for silvicultural treatments within the Riparian Reserves to accelerate the growth of trees for the attainment of the Aquatic Conservation Strategy (ACS) Objectives. Silvicultural treatments in Riparian Reserves are consistent with the ACS objectives, provided the treatment is determined to protect or enhance Riparian Reserve conditions. The proposed treatment will maintain or restore riparian conditions by enhancing growth of conifers while protecting present structural features. This treatment is consistent with ASC Objectives (pages B-11 to B-13).

## **II. PROPOSED ACTION AND ALTERNATIVES**

This section describes the proposed action and alternatives developed through the Density Management Study Plan and the interdisciplinary review process.

### **A. ALTERNATIVE 1 - (Proposed Action)**

The proposed action, the Ten High Density Management Study and Commercial Thinning, is located approximately 4 air miles north of Horton, Oregon, in T.15 S., R. 7 W., Sections 10 and 15 (see attached maps of the proposed project area). The proposed action (Alternative 1) is designed to harvest timber and to implement aspects of a Density Management Study Plan which is part of a larger series of U.S. Bureau of Land Management - Density Management Studies. Blocks 1-4 of the Density Management Study would be commercially thinned at varying densities within the upland and Riparian Reserves as described in the design features. The upland and Riparian Reserves of the adjoining forest (Blocks 5-7) would also be commercially thinned. Two streams within Block 5 would also be studied as part of the Riparian Buffer Component of the proposed Density Management Study (see design feature 9 on page 7). Approximately 389 acres of forest (304 acres of upland and 85 acres of riparian

reserve) would be treated with this proposed action. The total estimated harvest volume from the proposed action would be approximately 8.4 million board feet (MMBF) of timber.

Treatment areas for both the Density Management Study project and the adjacent proposed commercial thinning within Matrix and Riparian Reserves are predominantly dense Douglas-fir stands with a birthdate between 1950-1954 (43-47 years old). A minor component of these stands include western hemlock, western redcedar, Pacific yew, and hardwoods. The thinning prescription would, in general, leave the largest trees with some clumping of trees to provide for other values such as wildlife tree retention. Douglas-fir and western hemlock would be treated the same; no preference would be given to either in the marking prescription. All Pacific yew, western redcedar, and hardwoods would be retained in the thinning to maintain diversity.

The proposed action would include the following activities: new road construction, road renovation, and road improvement; commercial thinning at various densities of tree retention; harvest and replanting of 0.25 and 0.5 acre patch cuts.

**Road Access** The *transportation* plan would include: 1) new construction of Spurs A, B, C, and D totaling 1,395 feet (0.26 miles); 2) Renovation of road numbers 15-7-10.3, portion of 14-6-34, and 15-7-15; and 3) Improvement of road numbers 15-7-10, portion of 15-7-10.1, 15-7-10.2, portion of 15-7-10.4, 15-7-10.5, 15-7-10.6, 15-7-10.7, 15-7-10.8, and portion of 14-6-34, by removing brush, grading, re-ditching, and placing a six-inch lift of surfacing material. To allow for winter logging, Spurs A and B would also be surfaced. Spurs C and D would be purchaser's option to rock.

All roads within the sections would be evaluated at a later date within the context of a district wide transportation management plan to meet resource needs.

#### **PROJECT DESIGN FEATURES OF THE PROPOSED ACTION**

The following project design features would be implemented in conjunction with the proposed action. Project design features or operating procedures normally used to avoid or reduce environmental impacts have been developed by the interdisciplinary team.

#### **Design features Common to both the Density Management Study and Commercial Thinning (Blocks 1-7) are as follows:**

1. In order to slow the spread of noxious weeds, all yarding and road construction equipment including subsoilers would be cleaned prior to its arrival on BLM land.
2. For the purpose of long term productivity and maintenance of biological diversity, retain all down material of advanced decay (Decay Class 3, 4 or 5) for coarse woody debris (CWD).
3. To provide habitat for cavity dependent wildlife and to protect the future source of down logs, snags not posing a safety hazard would be reserved. Directional felling and yarding would be utilized to protect residual green trees and snags consistent with State safety practices. Snags felled as danger trees would be retained on site as CWD.

4. Yarding would be done from newly constructed road grades, and renovated and improved existing road grades with cable or tractor equipment. All yarding would be to designated or approved landings. Tractor skid trails would be predesignated and approved by an authorized officer.
5. Tractor Yarding- Tractor skid trails would be limited to slopes less than 35 percent. The tractor yarding would occur during periods of low soil moisture (generally less than 25% soil moisture). All tractor skid trails would be predesignated and approved by an authorized officer, and would occupy less than 10% of the tractor logged area. All yarding would be to designated or approved landings. Skid trails used in the harvesting would be water barred and subsoiled with a self-drafting winged subsoiler to maintain long term soil productivity. No tractor yarding would occur within Riparian Reserves.
6. Cable Yarding- A cable system capable of lateral yarding 75 feet would be used. Yarding corridors would not exceed 12 feet in width. A minimum of one-end suspension would be required when cable yarding. Landings would be located approximately 150 feet apart to minimize impacts to reserve trees and soils. Cable yarding with a minimum of one-end suspension would be required when yarding within Riparian Reserves. Directional felling and yarding away from streams would be required to provide for streambank stability and water quality. Streams FAA and R within the density management study area may require yarding across the stream channel. Full suspension would be required when yarding across these stream channels and adjacent banks. (Tail lift trees may be needed to attain the required suspension across these stream channels in areas of poor deflection. Any yarding corridors across these streams would be within 45 degrees of perpendicular to the stream channel.)
7. Thinning within Riparian Reserves was prescribed to meet the long term objectives of the Aquatic Conservation Strategy and develop large trees within the reserve more quickly than would develop naturally. Approximately 85 acres of Riparian Reserves would be thinned.
8. All Pacific yew, western redcedar, and hardwoods would be retained in the thinning to maintain diversity.
9. Yarded log lengths would be limited to a maximum of 40 feet to protect residual trees during yarding.
10. Harvest activities would not occur during sap flow season (April 15 - June 15) to limit bark and cambium damage to reserve trees.
11. Unmerchantable tree tops and limbs would not be yarded to the landing and should be left on site to contribute to soil productivity. Landing slash piles would be covered and burned as needed after fall rains have begun. Plastic covers would be removed before burning. See density management design feature number 5 on page 7 for site preparation needed in the patch cut areas to be planted.
12. Approximately 7 acres of upland dry meadows within the project area would be excluded from the treatment area and reserved to protect the habitat associated with these meadows. No yarding or use of equipment across these meadows would occur.
13. Roads and spurs would be built to SN-16 width standards and would be surfaced to allow for winter logging. Spurs C and D would be purchaser's option to surface.

14. Access to the improved roads 15-7-10.5, 10.6, 10.8 would be barricaded (with tank traps) upon completion of the logging as designated by the Administrative Officer. The improved 15-7-10.1 would be barricaded (with a tank trap) at its junction with the 15-7-10.4 road.

15. All plus trees (genetically select trees) would be reserved. Tree numbers are 1462, 1463, 1464, 1465, 1466, 1467, 1468, and 1469.

16. Residual overstory conifers 28" and larger would be reserved.

17. One to three dominant or codominant wolf trees (limby trees) per acre would be reserved where available for their wildlife and botanical habitat value.

18. Conifers 6 inches DBH and smaller would be retained.

19. No specific protection buffers were established for a Eugene District Review list species site *Botrychium virginianum*. This site is located within Block 1 of the Density Management Study area where a landing is planned. The *Botrychium virginianum*, located at this site would be transplanted to an alternate site. Another species unusual to the Coast Range, *Botrychium multifidum*, was found at two sites; one site near the 14-6-34 road and one site within a nontreatment area. The few plants of this species adjacent to the road would be left and their response to the thinning treatment would be monitored. Both of these species occur across a broad geographic range and are known to be more common outside of the Coast Range Province.

#### **Design Features Pertaining Exclusively to the Proposed Commercial Thinning Blocks 5-7**

1. The proposed commercial thinning within Blocks 5-7 would be thinned in the upland to approximately 80-90 trees per acre (TPA) and a total basal area of 125-135 sq. ft. per acre (approx. relative density of 35-40). The Riparian Reserves would be thinned to approximately 70-80 TPA and a total basal area of 125-140 sq. ft. per acre (approx. relative density of 30-35) to meet ACS objectives (Exception for study purposes: see design feature 9 on page 7). All canopy closure would remain above 40%.

2. Fish and aquatic habitats would be protected by Riparian Reserves and logging practices sufficient to maintain existing water quality. No-treatment buffers (minimum of approximately 35-40 feet each side of the stream) adjacent to streams within the treatment area of Blocks 5-7 would provide for protection of streambanks while allowing treatments to occur within the Riparian Reserves to provide for the long-term attainment of ACS objectives.

#### **Design Features Pertaining Exclusively to the Density Management Study Project (Blocks 1-4 and portion of Block 5))**

The following design features would be implemented in conjunction with the Density Management Study. These include designed block replications to allow for analysis as set forth in the Density Management Study in addition to site preparation and planting guidelines to accomplish the study design. The Density Management Study consists of four treatment areas as follows:

1. Block No. 1 (moderate density treatment) - Total acres treated in Block No. 1 is approximately 67 acres and would include approximately 12 acres of treatment within the Riparian Reserve. Approximately 70% of the block

would be thinned to a density of 80-110 TPA. Approximately 7% of the block would consist of well-dispersed circular patch cuts ranging from .25 - 1.0 acre. The remainder of the block would consist of well-dispersed leave (no cut) islands ranging from .25 - 1.0 acre in size and other reserves.

2. Block No. 2 (high density treatment) - Total acres treated in Block No. 2 is approximately 40 acres and would include approximately 32 acres of treatment within the Riparian Reserve. Approximately 74% of the stand would be thinned to a density of 120-135 TPA to provide a moderate rate of understory development and growth in tree diameter. The remainder of the block would consist of well-dispersed leave (no cut) islands approximately 0.5 acres in size and other reserves.

3. Block No. 3 (control area) - A control unit of approximately 56 acres would provide a means of comparing stand development and species response in treated versus untreated stands. No harvesting would occur within the control block.

4. Block No. 4 (variable density treatment): A highly variable (light to heavy) opening of the canopy would provide an opportunity for the most rapid development of structural diversity. Total acres treated in Block No. 4 is approximately 48 acres and would include approximately 8 acres of treatment within the Riparian Reserve. Approximately 9% of the stand would be thinned to a density of 40 trees per acre (TPA) (low density treatment). Approximately 34% of the stand would be thinned to a density of 80 TPA (moderate density treatment). Approximately 30% of the stand would be thinned to a density of 120 TPA (high density treatment). Approximately 9% of the stand would consist of well-dispersed circular patch cuts ranging from 0.25 - 1.0 acre in size. The remainder of the block would consist of well-dispersed leave (no cut) islands ranging from 0.5 - 1.0 acre in size and other reserves.

5. Site preparation within the Density Management Study Area- The accessible 1/4 to 1 acre patch cuts with slopes less than 40% would be excavator piled, covered and burned. This would be approximately 5 patch cuts totaling approximately 3.25 acres. The remaining 10 proposed patch cuts totaling approximately 6.5 acres would be evaluated after harvest and treated as needed using hand piling or swamper burning, depending on the conditions after harvest operations have been completed. Dependent upon fuel loadings after harvest, mechanical and manual logging and scattering of fuels in the patch cuts would be considered. (Plastic covering would be removed before burning.)

6. Treatment areas would be planted with a variety of tree species at variable densities, as discussed in the Density Management Study Plan.

The PNW Riparian Component of the Density Management Study consists of the following:

7. Streamside retention protection buffers would be used adjacent to streams FB, FC, FAA, RA, RB, RC and RD. These streamside retention protection buffers would reserve trees directly contributing to streambank stability and overhead shading. The width of these buffers would be based upon the drip-lines of the largest conifer, (between 10 and 60 feet in width on each side of the streams).

8. Stream variable-width protection buffers would be used adjacent to streams R, F and FS. The width of these buffers would be based upon ecological breaks of the vegetation (composition, age) and slope character (stability, gradient). The width of these buffers would range from approximately 50 to 100 feet in width on each side of the streams.

9. The upper end of the main stream (stream MS) and stream VC within Block 5 would be part of the PNW Riparian Component of the Density Management study. The main stream in this area would have approximately a 200 feet no-treatment buffer each side of the stream. Stream VC would have a variable width no-treatment buffer ranging approximately 50-100 feet wide each side of the stream. Upslope of these buffers the stand would be thinned to a density of approximately 80-90 TPA.

## **B. ALTERNATIVE 2**

This alternative would be similar to Alternative 1, however, no thinning treatment would occur within Riparian Reserves contained within Blocks 5-7. There would be approximately 304 acres of thinning in the upland and approximately 52 acres of thinning in the Riparian Reserves for an approximate total of 356 acres of thinning with this alternative.

## **C. ALTERNATIVE 3**

Only the thinning associated with Blocks 1-4 of the Density Management Study would occur with this alternative. There would be approximately 103 acres of thinning in the upland and approximately 52 acres of thinning in the Riparian Reserves for an approximate total of 155 acres of thinning with this alternative.

## **D. ALTERNATIVE 4 (No Action)**

All timber harvest activities would be deferred, and no management activities described under Alternatives 1, 2, or 3 would occur at this time.

## **III. EXISTING ENVIRONMENT**

This section will describe key components of the existing environment. The plants and animals in the project area do not differ significantly from those discussed in the Eugene District Proposed Resource Management Plan/Environmental Impact Statement (RMP EIS, 1994) (Chapter 3).

The Lake Creek watershed contains approximately 68,771 acres. Approximately 15,995 acres (23.3%) of the Lake Creek watershed is owned by forest industry companies and an additional 12,824 (18.6%) are owned by other private owners. This private ownership totals approximately 28,819 acres or approximately 42% of the watershed. The State of Oregon administers 8,090 acres (11.8%) of the watershed. Intensive timber management or agriculture is practiced on much of this ownership and is likely to continue. BLM administers 31,950 acres or approximately 46 per cent of the watershed. (*Lake Creek Watershed Analysis, 1995*)

### **Vegetation**

Of 31,950 acres administered by BLM within the Lake Creek Watershed, approximately 3,507 acres (11%) are less than 10 years in age; approximately 4,607 acres (14.4%) are classified as sapling pole (10-29 yr.); approximately 10,480 acres (32.8%) are classified as pole-young (30-79 yr.); and approximately 4,584 acres (14.3%) are in a late successional condition (i.e., ≥80 years old). Approximately 620 acres (1.9%) of the of BLM-administered



land within the Lake Creek Watershed is classified as mature over young and may exhibit structural characteristics associated with large mature or old forest stands, and approximately 1,822 acres (5.7%) are classified as old over young and generally exhibit structural features associated with old forest. The remaining BLM-administered land within the Lake Creek Watershed includes the following vegetation types: hardwoods (4,414 acres or 13.8%); mixed conifer- hardwood ( 1,691 acres or 5.3%); and a negligible amount of nonforest (225 acres) (*Lake Creek Watershed Analysis, 1995*).

The upland overstory of the project area is predominantly a closed, dense canopy of second growth Douglas-fir (43-47 years old) which has been precommercially thinned in the past. Occasional individuals and/or pockets of western hemlock, western redcedar, bigleaf maple, red alder and chinquapin oak are scattered throughout the Douglas-fir stand.

The understory is fairly open with minimal brush in many areas. The understory varies from open to moderately brushy with vine maple, Oregon grape, salal, huckleberry, or oceanspray. Herbaceous ground cover is open, mossy duff and debris or light patches of sword fern or bracken fern. Riparian areas are dominated by red alder with scattered bigleaf maple and sapling western redcedar with vine maple and devils club patches in headwater areas. The herbaceous component in the riparian includes oval-leaved mitrewort, Oregon wood sorrel, foamflower, ladyfern, deerfern, candyflower, Oregon oxalis, youth-on-age, Scouler corydalis, fringe cup and great hedge-nettle.

### **Botanical Resources**

Field reviews for botanical resources were conducted in the summers of 1996 and 1997. No federally listed threatened or endangered plant species were located during those surveys. There are no known sites in the project area of Survey and Manage Component 1 or Protection Buffer species.

A Eugene District Review list species, *Botrychium virginianum*, is located within Block 1 of the Density Management Study area where a landing is planned. Another species unusual to the Coast Range, *Botrychium multifidum*, was found at two sites; one site near the 14-6-34 road and one site within a nontreatment area. (See design feature Number 19 on page 6.)

A string of lithosol, south exposure meadows extend from the south central to the west edge of T.15S., R.7W., Sec.10. These meadows would be reserved and excluded from all treatment areas associated with the proposed action and alternatives. (See design feature Number 12 on page 5.)

### **Soils**

The soils in the proposed project area are classified as Klickitat, Blachly, and Digger series. The Klickitat series consist of deep, reddish brown, loamy-skeletal soils. They occur on ridges and steep, smooth or dissected slopes in mountainous topography. The Klickitat soils are members of the loamy-skeletal, mixed, mesic family of *Typic Haplobrepts*. The Blachly series consists of deep, red, clayey soils. They occur on ridgetops and sideslopes. The Blachly clay loam soils are members of the fine, mixed, mesic family of *Umbric Dystrichrepts*. The Digger soil series consists of moderately deep, well-drained, brown, loamy-skeletal soils. They are found on steep side slopes and narrow ridges and headwalls. The Digger soils are members of the loamy-skeletal, mixed, mesic family of *Dystric Eutrochrepts*.

### **Timber Production Capability Classification (TPCC)**

The proposed thinning treatment area is classified as suitable commercial forest for timber production. There are approximately 29 acres withdrawn for non-suitability for timber production in the project area. These areas would be reserved (excluded from all treatment areas associated with the proposed action and alternatives).

### **Fisheries, Aquatic and Riparian Resources**

The main Lake Creek tributary which flows through the study area from northwest to southeast contains spawning and rearing habitat for cutthroat trout. Habitat types include rapids, cascades, low falls, and small rearing pools. Stream substrates are rubble, cobble, gravel, boulders, sand and low to moderate amounts of mostly small logs and wood debris. The main stream is shaded with hardwoods primarily on the flood plain with second growth conifers located on adjacent side slopes. The lower portion of the main tributary downstream of the proposed study area has been enhanced by installing logs and boulders to improve conditions for trout and potential use by coho salmon and steelhead. Cutthroat trout were also found below falls at the lower end of a tributary from the west near the south boundary of section 10 and project area (stream R near the junction with the main tributary on the project map). Additional habitat is available for any trout near the lower ends of other small tributaries within the area.

### **Wildlife**

#### Threatened and Endangered Species

Evaluation of the proposed project area related to the bald eagle, northern spotted owl, and the marbled murrelet showed that the area is not being used by these species. This proposed thinning is not within any known northern spotted owl provincial radius. The proposed project area does not provide suitable marbled murrelet habitat.

#### Special Status Species

Surveys for special status reptiles and amphibians were conducted across the proposed project area. Four Variegated Salamanders (*Rhyacotriton variegatus*), BLM sensitive species, were located in streams FS, S, and R within the study area. These locations would be excluded from the proposed treatment area. FS and R would receive variable width no treatment buffers (approximately 50-100 ft.) each side of the stream. The headwater area of Stream S would receive approximately a 50 feet no treatment buffer around the stream at the headwall area. It flows through the untreated control block of the study.

#### Survey-and-Manage Species

Field surveys for the red tree vole have not been conducted because the survey protocol has not been finalized. However, the Lake Creek Watershed met the minimum red tree vole threshold habitat interim guidance requirements (potential habitat sufficient for dispersal), therefore no site specific surveys are needed. (BLM-Instruction Memorandum No. OR-97-009)

Non-protocol field surveys for survey-and-manage mollusks did not detect the presence of any of these species within the area.

#### Big game

Black-tailed deer and elk occur in the project area. The proposed project area is being used by deer and elk for forage and cover.

#### Neotropical migrants

Species associated with second growth forest habitat, such as Swainson's thrush, the olive-sided flycatcher, and the hermit thrush, would be expected to occur in these stands.

#### Other Wildlife

Other salamanders found in the project area include the pacific giant salamander and the western redbacked salamander. There are no known raptor nests or heron rookeries in the project area or in close vicinity.

#### **Cultural Resources**

A cultural resource inventory of the proposed project area has not been completed. Past pre-project inventories in the lands administered by the Bureau of Land Management within the Coast Range Physiographic Province have not resulted in the discovery of historic properties, therefore no cultural resources are expected to be affected. The guidelines of the Memorandum of Understanding (MOU) between the Bureau of Land Management and the Oregon State Historic Preservation Officer (December 13, 1994) makes the conclusion "that the chances of finding important historic properties in the area are so minimal such that further cultural resource survey prior to project implementation does not justify the continued expenditure of federal funds in the effort". The MOU does set forth procedures covering post-project cultural resource surveys which would be implemented.

#### **Visual Resources**

The proposed project area is classified as Visual Resource Management Class III (VRM III), which allows for moderate levels of change to the characteristic landscape. Management activities may attract attention but should not dominate the view of the casual observer. VRM III objectives are to "partially retain the existing character of the landscape." A thinning in this area would meet this objective (Eugene District ROD/RMP, June 1995; pages 75-78).

#### **Recreation Resources**

The proposed project area is within the Upper Lake Creek Special Recreation Management Area (SRMA) boundary. The Upper Lake Creek SRMA is intensively managed for recreational activities. Most of the recreational development is distant from the proposed project area and is focused along Lake Creek and Hult Reservoir. Within the SMRA, off highway vehicle (OHV) use is limited to the designated roads listed in the Eugene District RMP and include the 15-7-10, 10.4, 10.7, 15-7-15, 14-6-34 (BLM portions) roads near or within the proposed project area. (Eugene District ROD/RMP, June 1995; page 214)

#### **Fuels/Down Woody Debris**

The current stand contains numerous old growth down logs in various lengths and in the later decay classes that are functioning as wildlife, bryophyte, and fungal habitat and are providing nutrients to the soil. There is little down woody debris in the early decay classes. There are few natural snags greater than 15 inches in diameter. There are some root rot pockets of *Phellinus weirii* scattered throughout the project area. The preharvest fuel bed is widely variable throughout with ranges from less than 5 tons per acre to heavier fuel beds of greater than 40 tons per acre. The proposed project area is approximately 10 miles west of the Willamette Designated Area (DA).

#### **IV. ENVIRONMENTAL CONSEQUENCES**

This section will describe the consequences of implementing the proposed action and the anticipated consequences of the no action and other alternatives.

##### **A. Environmental Consequences of Alternative 1- PROPOSED ACTION**

###### **Vegetation**

The proposed action's commercial thinning would immediately increase the amount of light reaching the forest floor. This would increase the growth of understory vegetation in the short term. There would be some short term recovery of mortality and potential mortality volume. Most of the remaining trees would be the larger dominant and codominant conifer species comprised mostly of Douglas-fir. The thinning would decrease competition between trees maintaining or increasing individual tree growth and tree vigor with enlargement of the existing crowns (canopy closure) over time. Forest floor vegetation would again decrease with the reduction of light reaching the forest floor as the canopy closure increases over time.

The proposed Density Management Study would create a variety of stand densities along with patch cuts and leave islands. A variation of understory vegetation response and multi-canopy development is expected with varying light conditions in the understory due to differences in overstory stand densities and canopy closures. Understory vegetation response and multi-canopy development should be greater in the stands with lower overstory densities.

Individual tree growth also would vary with differences in stand densities. Individual trees within the lower density stands should show greater increased growth, primarily in diameter and crown development over time. Planting in the understory and patch cuts should speed the development of multi-canopies. Monitoring would occur over time.

Vegetative diversity would be maintained both in the commercial thinning and study areas by reserving hardwood trees and other coniferous species. Herbaceous, fungal, and bryophyte diversity would be maintained by keeping the disturbance of large down logs to a minimum.

###### **Botany**

Field reviews for botanical resources were conducted in the summers of 1996 and 1997. No federally listed threatened or endangered plant species were located during those surveys. Thus, the proposed action would have no effect upon threatened or endangered plants. Currently, no Protection Buffer, Survey and Manage strategy #1 species are known to occur within the project area.

As a result of the proposed action, the *Botrychium virginianum* would be relocated to a site of similar habitat. The proposed action is not expected to affect the *Botrychium multifidum* sites. Monitoring of *Botrychium virginianum*'s and *Botrychium multifidum*'s responses to the proposed action would provide an opportunity to learn more about the species and the effects of treatment around it.

A string of lithosol, south exposure meadows extending from the south central to the west edge of T.15S., R.7W., Sec.10 would not be affected. These meadows would be reserved and excluded from all treatments associated with the proposed action and alternatives.

## **Soils**

Growth impairing soil disturbance would be negligible with the proposed action using the planned project design features. Sufficient litter, logging debris and down logs would be retained to maintain soil organic material, soil organisms and nutrient levels.

## **Aquatic and Riparian Resources / Fisheries.**

There are approximately 85 acres of proposed thinning within the Riparian Reserves adjacent to buffered streams (see EA project map). The thinning would maintain or increase growth and vigor of the retention trees by providing additional growing space. The proposed thinning would benefit terrestrial, aquatic, and riparian species that rely heavily on larger standing trees, snags and /or down logs for habitat, accelerating the recovery of the riparian area.

Proposed protection of riparian vegetation and thinning of trees at the study area would be expected to have variable effects on fisheries, depending on the amount of protection, thinning, and resulting improvements of riparian vegetation and stream channel conditions at each location. Fish habitat in the main tributary (stream M on project map) to Lake Creek would be improved in locations where thinning would accelerate tree growth and later result in more large wood in the channel (providing more structure, cover, pools, and retention of gravel and small wood debris).

The proposed thinning would show only a small increase in flows since the residual trees would use the increase in available water. Any changes in flows would be small relative to the range of natural flows that occur due to natural storm events. Future large wood introduced into the stream channels would improve water quality by trapping sediments, stabilizing stream channels, and slowing high flows.

The untreated Riparian Reserves adjacent to streams would protect streambanks and would contribute to maintaining current water quality and conditions of riparian and aquatic functions. Future riparian restoration or silvicultural treatments may be necessary to accelerate long-term riparian recovery.

The National Marine Fisheries Service (NMFS) concurred with a Level 1 Province Team finding of *“Likely to Adversely Affect”* for coho salmon and steelhead based on a possible short-term increase in sedimentation. The proposed actions are in compliance with the Aquatic Conservation Strategy and the (NMFS) Biological Opinion on the Eugene District RMP in the range of the coho salmon.

## **Wildlife**

The project area would continue to provide spotted owl dispersal habitat, however, the proposed thinning and Density Management Study would modify dispersal habitat. The Biological Opinion received from the USFWS stated that the proposed action would be *“Not Likely to Adversely Affect”* the northern spotted owl. This proposal would have a *“No Affect”* on the marbled murrelet and other federally listed/proposed terrestrial species.

The thinning would maintain or increase growth and vigor of the retention trees by providing additional growing space. This thinning would benefit those species that rely on larger trees, snags and down wood for habitat. (i.e. Pileated woodpeckers and some bat species for maternal roost habitat). The stand would continue to provide cover

for big game and there would be an increase in forage as the understory vegetation begins to develop. Existing down logs, larger diameter green trees, and snags to the extent possible would be left to continue functioning in the forest. Retention of snags would still provide habitat for cavity nesting.

The proposed unthinned areas within the project area would contribute to maintaining current water quality and conditions of riparian and aquatic functions. Bird species that prefer dense stands, (Swainson's thrush, olive-sided flycatcher, and hermit thrush) would continue to utilize the existing habitat as well as other mobile wildlife species associated with these habitat conditions. Small suppressed trees currently existing in the riparian zone would self-thin through succession contributing small diameter snags and down logs as the dominant and codominant trees continue to grow. Tree growth and large snag and down wood recruitment would occur much slower over time delaying the beneficial effects of the habitat they would provide.

### **Research**

The proposed research would provide additional knowledge of silvicultural systems to accelerate the development of old growth characteristics and the opportunity to monitor effects of density management in Riparian Reserves on microclimate, and riparian-associated species.

### **Cultural Resources**

No cultural resources are expected to be affected by the proposed action.

### **Visual Resources**

Visual Resource guidelines VRM III would be met.

### **Recreation Resources**

There would be no adverse consequences to dispersed recreational activities.

### **Fuels**

Post-treatment fuel loading in the proposed commercial thinning areas (Blocks 5-7) would increase, remaining highly variable due to the highly variable preharvest fuel bed conditions that are present. Fuel loading within the Density Management Study area (Blocks 1-4) would increase but would be highly variable throughout the study area due to both the highly variable preharvest fuel bed conditions present and the variety of thinning density treatments that would be implemented. (Post harvest fuel loading would range from <5 tons per acre to 55 tons per acre in the proposed project area). Fuels would be almost entirely ground fuels with some widely scattered ladder fuels. The increase in down woody debris in the thinning areas, along with the retention of existing down logs and snags, would provide a number of ecosystem functions, including habitat for many species, moisture retention, and nutrient retention and cycling. Site preparation within the Density Management Study Area's 1/4 to 1 acre patch cuts (described in the density management design features) would promote planting survival of conifers and establishment. Affected area would be approximately 3-10 acres depending upon site preparation needs determined after harvest.

### **Air Quality**

Burning activities would be consistent with Oregon Smoke Management Regulations. Most piles would be burned down in 4-6 hours with only minor amounts of smoke being generated after 24 hours. The proposed burning would be of very short duration and would have no local short or long-term impacts on air quality. All burning would meet the State Implementation Plan for smoke management and the National Ambient Air Quality Standards set forth in the Clean Air Act.

### **Social-Economic**

The thinning would provide immediate commodities to the public. By thinning at this time, the biological window to maintain or increase vigor and volume growth of the upland stand for future commodities would be realized. The proposed action would support the Eugene District intermediate harvest commitment levels for Fiscal Year 1998. Timber would be supplied for the benefit of the economy and timber receipts would benefit the County and services provided to communities.

### **Unaffected Resources**

The following resources are either not present or would not be affected by any of the alternatives: Areas of Critical Environmental Concern, prime or unique farm lands, floodplains, Native American religious concerns, solid or hazardous wastes, Wild and Scenic Rivers, Wilderness, and low income or minority populations.

### **B. Environmental Consequences of ALTERNATIVE 2 (same as Alternative 1 Proposed Action except no thinning treatment would occur within Riparian Reserves of Blocks 5-7).**

There would be approximately 356 acres of thinning with this alternative. The environmental consequences of this alternative would be similar to those environmental consequences described in the proposed action, Alternative 1. The exception would be the Riparian Reserve of Blocks 5-7 (shown on the project map) would not be commercially thinned resulting in approximately 33 less acres of Riparian Reserves thinned. A portion of the PNW riparian buffer component of the Density Management Study adjacent to stream VC (described in design feature #9 on page 8) would not occur. The environmental consequences of not thinning within the Riparian Reserves of Blocks 5-7 and the study area adjacent to stream VC using this alternative would be similar to those environmental consequences described below in the "No Action" Alternative 4 (page 15-16) under riparian resources.

### **C. Environmental Consequences of ALTERNATIVE 3 (Only the Density Management Study, Blocks 1-4, would be thinned at this time.)**

There would be approximately 155 acres of thinning (Density Management Study Blocks 1-4) with this alternative. The environmental consequences to the treated upland and Riparian Reserve within the Density Management Study area with this alternative would be similar to those consequences described in the Proposed Action, Alternative 1. The proposed commercial thinning area (Blocks 5-7 shown on the project map) would not be thinned with this alternative resulting in approximately 201 less acres of upland and approximately 33 less acres of Riparian Reserve thinned. A portion of the PNW riparian buffer component of the Density Management Study adjacent to stream MS and stream VC (described in design feature number 9 on page 8) would not occur. The environmental consequences of not thinning the upland, Riparian Reserve of Blocks 5-7, and the study area adjacent to stream VC with this alternative would be similar to those environmental consequences described below in the "No Action" Alternative 4 below.

#### **D. Environmental Consequences of ALTERNATIVE 4 (No Action)**

##### **Vegetation**

Not thinning Blocks 1-7 within the Matrix (GFMA) land use allocation would have no immediate direct impacts to the existing forest vegetation and would allow continued stand development. However, tree growth would slow down over time in the absence of a commercial thinning, and suppressed mortality and windthrow of the trees would increase as competition for growing space increases. Small diameter snags would continue to be recruited through this suppression mortality. Those dominant trees that are eventually released from competition would increase in vigor and growth, however, this succession process would occur much slower over time under the uniform, dense stand conditions present. The benefit of increased tree and stand growth over time would be reduced.

##### **Aquatic and Riparian Resources / Fisheries and Wildlife**

By not thinning Blocks 1-7, no immediate impact would occur to the existing forest habitat. This alternative would not speed the development of late-successional characteristics such as large trees, snags and down wood within the Riparian Reserves. Tree growth and large snag and down wood recruitment would occur much slower over time delaying the beneficial effects of habitat they would provide. The unthinned upland and Riparian Reserves would serve as a refuge for wildlife that prefer dense stands. Wildlife species associated with the current habitat conditions would persist under the present stand conditions but would see changes over time dependent upon future stand characteristics, disturbances, and type of management.

##### **Research**

The cooperative Density Management Study that has been developed to research various aspects of the NSO ROD would lose the Ten High Density Management Study site as part of its proposed regional study. The proposed research was designed to provide additional knowledge of silvicultural systems to accelerate the development of old growth characteristics and the opportunity to monitor effects of density management in Riparian Reserves on microclimate, and riparian-associated species.

##### **Social-Economic**

Commodities provided to the public through thinning would not occur. By not thinning at this time, the biological window to maintain or increase vigor and volume growth of the upland stand for future commodities would not occur. Timber to benefit the economy and timber receipts that would benefit the County would not be realized unless an alternative harvest area is provided. Alternative areas may have environmental effects that exceed those of this proposal.

**Unaffected Resources** The "No Action" Alternative 4 would have no effect on botanical resources, cultural resources, recreation resources, soils, air quality, and current fuel levels.

#### **V. CUMULATIVE EFFECTS**

##### **A Cumulative Effects of Alternative 1- PROPOSED ACTION**



This analysis incorporates the analysis of cumulative effects in the *USDA Forest Service and USDI Bureau of Land Management Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*, February 1994, (Chapter 3 & 4) and in the *Eugene District Proposed RMP / EIS November, 1994 (Chapter 4)*. These documents analyze most cumulative effects of timber harvest and other related management activities. None of the alternatives considered in this environmental assessment would have cumulative effects on resources beyond those effects analyzed in the above documents. The following section supplements those analyses, providing site-specific information and analysis particular to the alternatives considered here.

### **Vegetation**

The current vegetation pattern within the Lake Creek watershed has been described in the existing environment (page 9). Within the Lake Creek Watershed, BLM has had 18 acres of timber sale harvest since the implementation of the Northwest Forest Plan. The timber harvested was associated with the Major Tiekko timber sale sold in 1990 prior to the Northwest Forest Plan, and was awarded in 1994. Harvesting was completed in 1996 and planting in 1997. An additional 18 acres of regeneration harvest and 56 acres of thinning have been planned within this watershed under the Bear Cub timber sale (OR 090-EA-97-34). An additional 147 acres of thinning is currently being planned within this watershed under a proposed thinning, Hult View timber sale. The short-term effect of implementing the Proposed Action would be an increase of 389 acres of second growth forests that have been thinned within the Lake Creek Watershed. With the implementation of the Northwest Forest Plan, there would be an increase in mature and old forest habitat within the watershed over time as the Late-Successional Reserves (LSRs) and Riparian Reserves mature and develop.

### **Wildlife**

This thinning would continue to provide spotted owl dispersal habitat. Late-Successional Reserves (LSRs) have been designated across the landscape to maintain and enhance late-successional forests as a network of habitat for late-successional forest-dependent species, including the northern spotted owl. This network of LSRs, along with the network provided by the Riparian Reserves, would enhance a sustainable and intermixing population of owls. Approximately 19,160 acres of the Lake Creek Watershed are designated as LSR. This is approximately one third (27.9%) of the total watershed area and approximately 60 percent of the BLM ownership in the watershed. (*Lake Creek Watershed Analysis, 1995*).

The proposed action would not contribute to a decline of dispersal habitat for the northern spotted owl. With the implementation of the Northwest Forest Plan, there would be an increase in mature and old forest habitat within the watershed over time as stands within the LSRs and Riparian Reserves mature and develop. No impacts are expected to occur to the marbled murrelet or its habitat as the proposed treatment area does not currently provide suitable murrelet habitat.

### **Aquatic and Riparian Resources / Fisheries**

In reference to the northern spotted owl, the objective of Riparian Reserves within Matrix lands is to provide dispersal habitat across the landscape. This proposed action would contribute to this objective by maintaining and improving dispersal habitat within Riparian Reserves. There are approximately 16,078 acres of Riparian Reserves dispersed throughout the watershed of which approximately 5,574 acres of Riparian Reserves are dispersed throughout the Matrix (GFMA) land use allocation. (*Lake Creek Watershed Analysis, 1995*).

The proposed thinning within the Riparian Reserves would accelerate the growth of trees in this area for future wildlife habitat and future large in-stream structure for aquatic habitat, while adequately maintaining species and structural diversity; riparian and aquatic function; and water quality. This proposed action would contribute to the process of riparian recovery within this area of the Lake Creek Watershed over the long term. The untreated Riparian Reserves adjacent to streams would protect streambanks and would contribute to maintaining current water quality and conditions of riparian and aquatic functions, while allowing treatments to occur within the Riparian Reserves to provide for the long-term attainment of ACS objectives. Future riparian restoration or silvicultural treatments may be necessary to accelerate long term riparian recovery.

#### **Soils**

Cumulative effects to the soil resource would be negligible with the implementation of the "Project Design Features" of the proposed action.

#### **Air Quality**

The proposed burning would be of very short duration and would have no short or long-term cumulative impacts on local air quality.

#### **Social-Economic**

This proposed action would have a cumulative impact of providing more commodities (i.e. lumber) to the public over time while maintaining or increasing the vigor and volume growth of the stand through time. Timber to benefit the economy and timber receipts that would benefit the County would increase.

#### **B. Cumulative Effects of ALTERNATIVE 2 (same as Alternative 1 Proposed Action except no thinning treatment would occur within Riparian Reserves of Blocks 5-7).**

The cumulative effects to the upland and Riparian Reserves of Blocks 1-4 with the implementation of Alternative 2 would be similar to those described above for the upland and Riparian Reserves in Proposed Action Alternative 1, however approximately 33 less acres of Riparian Reserves would be treated with this alternative within Blocks 5-7. The cumulative effects of not treating this Riparian Reserve would be similar to those described below in the "No Action" Alternative 4 concerning aquatic, riparian, and fisheries resources.

#### **C. Cumulative Effects of ALTERNATIVE 3 ( Only the Density Management Study, Blocks 1-4, would be thinned at this time.)**

The cumulative effects to the treated upland and Riparian Reserves within the Density Management Study area with this alternative would be similar to those cumulative effects described in the Proposed Action, Alternative 1, however approximately 201 less acres of upland and 33 less acres of Riparian Reserves would be thinned with this alternative. The cumulative effects of not thinning the upland and Riparian Reserves of Blocks 5-7 with this alternative would be similar to those cumulative effects described below in the "No Action" Alternative 4 below.

#### **D. Cumulative Effects of Alternative 4- NO ACTION**

#### **Vegetation**

In the long term, tree growth would slow down in the absence of a commercial thinning, and suppressed mortality and windthrow of the trees would increase. Small diameter snags would continue to be recruited through

suppression mortality. Those dominant trees that are eventually released by the suppressed mortality would increase in vigor and growth upon release. However, this succession process would occur much slower over time under the uniform, dense stand conditions present.

#### **Aquatic and Riparian Resources / Fisheries / Wildlife**

The forest succession process and riparian recovery (i.e. water quality, fish habitat, habitat for wildlife species dependent upon large snags and down wood) would occur slower over time due to uniform, dense stand conditions present. No thinning within the proposed treatment area of the Riparian Reserve would delay the process of riparian recovery within this area of the Lake Creek Watershed over the long term. Wildlife species associated with the current habitat conditions would persist under the present stand conditions but would see changes dependent upon future stand characteristics, disturbances, and type of management over time.

#### **Social-Economic**

The no action alternative would have a cumulative effect of providing less commodities (i.e. lumber) to the public over time. Vigor and growth of the stand through time would be reduced. This would result in a decrease of commodities over time. Timber, to benefit the economy and timber receipts that would benefit the County would not be realized.

## VI. CONSULTATION AND COORDINATION

### A. LIST OF PREPARERS

The proposed action and alternatives were developed and analyzed by the following interdisciplinary team of BLM specialists:

Barry Williams	BLM Soil Scientist
Woody Banks	BLM Engineer
Dave Reed	BLM Fuels Specialist
Michael Southard	BLM Archaeologist
Phil Redlinger	BLM Silviculturist
Raul Morales	BLM Wildlife Biologist
John Applegarth	BLM Wildlife Biologist
Dan Crannell	BLM T & E Biologist
Russ Hammer	BLM Fisheries Biologist
Gary Wilkinson	BLM ARD/GIS Specialist
Kathy Pendergrass	BLM Botanist
Saundra Miles	BLM Recreation Planner - Visual Resources
Gary Hoppe	BLM Planning and Environmental Coordination
Al Corbin / Art Emmons	BLM Timber - Logging Systems
Graham Armstrong	BLM Hydrology
Mark Stephen	BLM Forest Ecologist

### B. CONSULTATION

Pursuant to the Endangered Species Act, formal consultation was completed with the Fish and Wildlife Service on this proposed action, along with other actions proposed in the Eugene District for Fiscal Year 1998. The Fish and Wildlife Service issued its Biological Opinion on March 3, 1997 completing consultation. The Biological Opinion received from the USFWS stated that the proposed sale would be "*Not Likely to Adversely Affect*" the northern spotted owl, and would have a "*No Affect*" on the marbled murrelet.

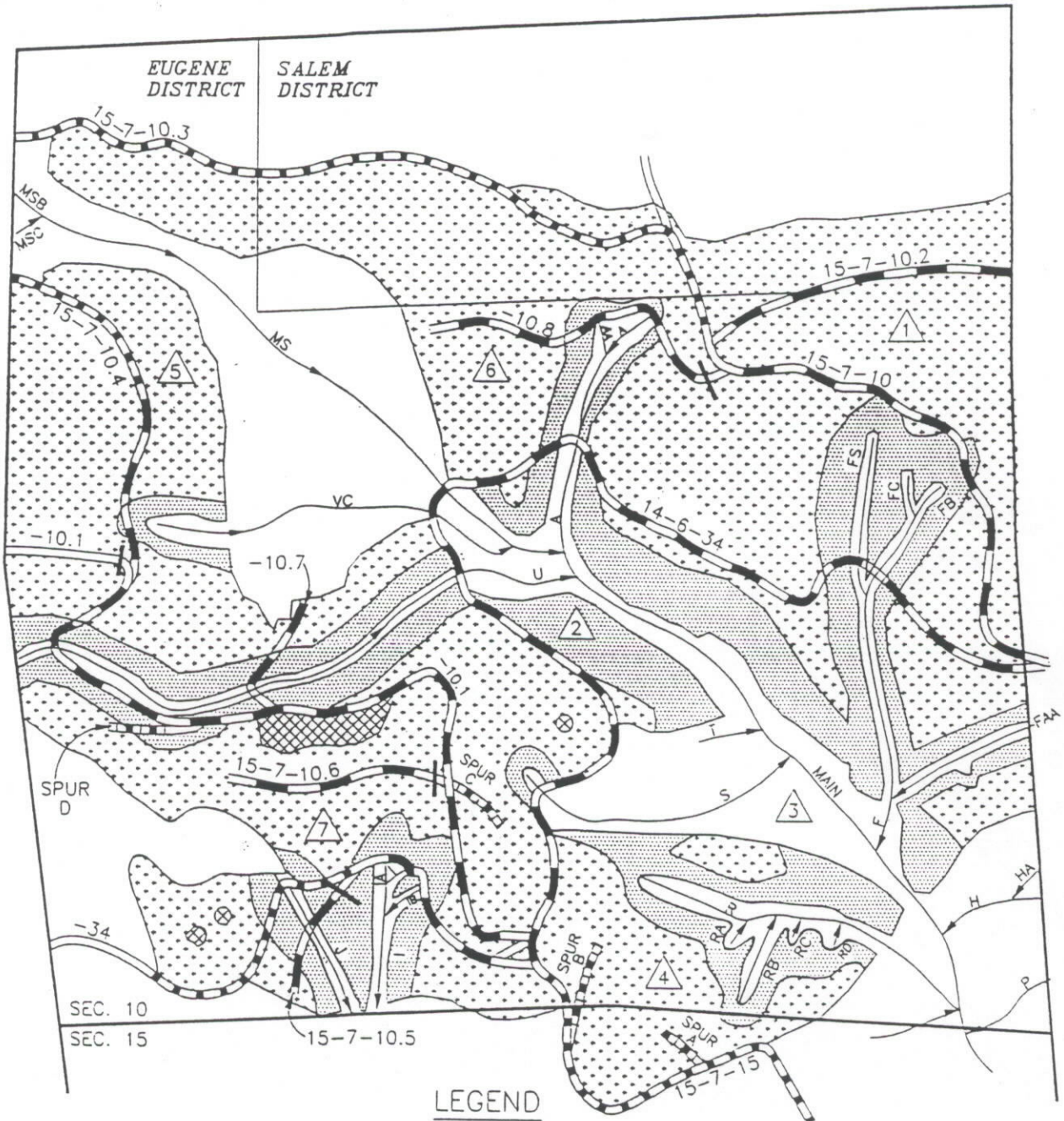
The National Marine Fisheries Service (NMFS) concurred with a Level 1 Province Team finding of "*Likely to Adversely Affect*" for coho salmon and steelhead based on a possible short term increase in sedimentation. The proposed actions are in compliance with the Aquatic Conservation Strategy and the (NMFS) Biological Opinion on the Eugene District RMP in the range of the coho salmon.

The interdisciplinary team consulted on the cooperative Density Management Study included:

Charley Thompson	BLM, Oregon State Office, Portland, OR
John Tappeiner	NBS, Corvallis, OR
Bruce Hansen	PNW, Corvallis, OR
Samuel Chan	PNW, Corvallis, OR
Dede Olson	PNW, Corvallis, OR

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
TEN HIGH PROJECT AREA

T. 15S., R. 7W., SEC. 10&15, WILL. MER., EUGENE DISTRICT



SCALE: 1" = 1,000 FT.

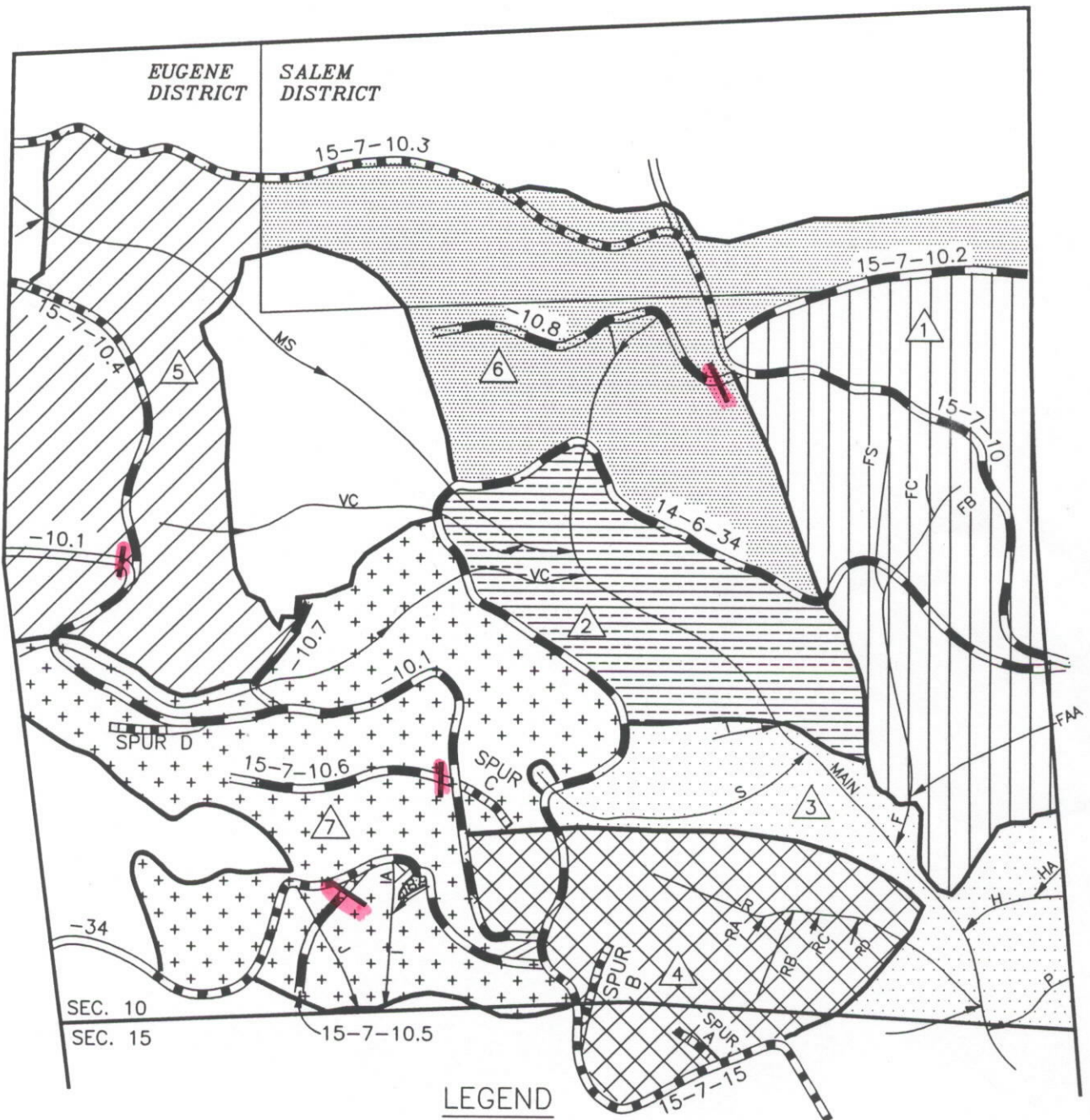
- |     |                                  |  |                        |
|-----|----------------------------------|--|------------------------|
|     | TREATED UPLAND                   |  | BLOCKS 1-7             |
|     | RESERVE AREA                     |  | ROAD TO BE IMPROVED    |
|     | TREATED RIPARIAN RESERVE         |  | ROAD TO BE CONSTRUCTED |
|     | ROCK OUTCROPS/MEADOWS POSTED OUT |  | ROAD TO BE RENOVATED   |
| A-V | STREAM ID                        |  | OTHER EXISTING ROADS   |
|     |                                  |  | PROPOSED BARRICADES    |



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

TEN HIGH BLOCK MAP

T. 15S. , R. 7W , SEC. 10&15 , WILL. MER., EUGENE DISTRICT



SCALE: 1" = 1,000 FT.

- |  |                           |  |                          |
|--|---------------------------|--|--------------------------|
|  | BLOCK #1 MODERATE DENSITY |  | BLOCK #6 COMMERCIAL THIN |
|  | BLOCK #2 HIGH DENSITY     |  | BLOCK #7 COMMERCIAL THIN |
|  | BLOCK #3 CONTROL          |  | STREAM ID                |
|  | BLOCK #4 VARIABLE DENSITY |  | ROAD TO BE IMPROVED      |
|  | BLOCK #5 COMMERCIAL THIN  |  | ROAD TO BE CONSTRUCTED   |
|  |                           |  | ROAD TO BE RENOVATED     |
|  |                           |  | PROPOSED BARRICADES      |

**UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
EUGENE DISTRICT OFFICE**

Preliminary  
Finding of No Significant Impact  
for  
Ten High Density Management and Commercial Thinning

Determination:

On the basis of the information contained in the Environmental Assessment, and all other information available to me, it is my determination that implementation of the proposed action or alternatives will not have significant environmental impacts beyond those already addressed in the *Record of Decision (ROD) for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (April 1994), the *Eugene District Record of Decision and Resource Management Plan* (June 1995), and the *Salem District Record of Decision and Resource Management Plan* (May 1995) with which this EA is in conformance, and does not, in and of itself, constitute a major federal action having a significant effect on the human environment. Therefore, an environmental impact statement or a supplement to the existing environmental impact statement is not necessary and will not be prepared.